Regional school context and teacher characteristics explaining differences in effective teaching behaviour of beginning teachers in the Netherlands

van der Pers, Marieke; Helms-Lorenz, Michelle

Published in:
School Effectiveness and School Improvement

DOI:
10.1080/09243453.2019.1592203

Publication date:
2019

SCHOOL EFFECTIVENESS and SCHOOL IMPROVEMENT
An International Journal of Research, Policy and Practice

Routledge
Taylor & Francis Group

School Effectiveness and School Improvement
An International Journal of Research, Policy and Practice

ISSN: 0924-3453 (Print) 1744-5124 (Online) Journal homepage: https://www.tandfonline.com/loi/nses20

Regional school context and teacher characteristics explaining differences in effective teaching behaviour of beginning teachers in the Netherlands

Marieke van der Pers & Michelle Helms-Lorenz

To cite this article: Marieke van der Pers & Michelle Helms-Lorenz (2019) Regional school context and teacher characteristics explaining differences in effective teaching behaviour of beginning teachers in the Netherlands, School Effectiveness and School Improvement, 30:2, 231-254, DOI: 10.1080/09243453.2019.1592203

To link to this article: https://doi.org/10.1080/09243453.2019.1592203

Published online: 26 Mar 2019.

SCHOOL EFFECTIVENESS AND SCHOOL IMPROVEMENT
2019, VOL. 30, NO. 2, 231–254
https://doi.org/10.1080/09243453.2019.1592203

Routledge
Taylor & Francis Group

ARTICLE

Regional school context and teacher characteristics explaining differences in effective teaching behaviour of beginning teachers in the Netherlands

Marieke van der Pers and Michelle Helms-Lorenz

Department of Teacher Education, Faculty of Behavioural Sciences, University of Groningen, Groningen, the Netherlands

ABSTRACT

This explorative study adopts a regional perspective on understanding differences in observable teaching quality by describing regional levels in teaching quality for specific regions and by examining the contribution of schools' regional characteristics on effective teaching behaviour of 1,945 beginning teachers in secondary education. Beginning teachers working in schools located in regions of population decline have better basic teaching skills than beginning teachers working elsewhere. Multilevel analyses reveal that within the Randstad region, adaptive instruction skills are weaker in very urban areas. Schools' changing student numbers influence the quality of adaptive instruction skills and teaching learning strategies. These findings indicate that differences in teaching quality become visible at lower regional levels and are of interest because these effects on student outcomes might not be captured in national figures. This approach adds to existing literature and is useful to tailor current professionalization programmes for beginning teachers to specific regional contexts.

ARTICLE HISTORY
Received 22 December 2017
Accepted 5 March 2019

KEYWORDS
Effective teaching behaviour; regional differences; beginning teachers; classroom observations; secondary education; the Netherlands

Introduction

The influence of national-, school-, teacher-, and classroom-level factors on student achievement is widely acknowledged (Creemers & Kyriakides, 2008; Opdenakker & Van Damme, 2007; Scheerens, 2016), and research on teacher characteristics influencing student achievement has revealed numerous effective behaviours before, during, and after the actual teaching practice (Creemers & Kyriakides, 2008; Scheerens, 2016). Teacher and classroom factors play an important role in predicting student outcomes. In addition, school context influences effective teaching behaviour. Schools have to facilitate high-quality teaching conditions, and effective schools are characterized by malleable conditions, such as school leadership, school policies, and organizational conditions (Creemers & Kyriakides, 2010; Kraft & Papay, 2014; Kutsyuruba, 2016; Reynolds & Teddlie, 2000; Scheerens, 2016). These conditions are determined by school antecedents (e.g., external school environment) and school ecology (e.g., stable teaching staff, average socioeconomic status [SES] of students) (Reynolds & Teddlie, 2000;

CONTACT Marieke van der Pers m.van.der.pers@rug.nl

Scheerens, 2016). This implies that schools have to deal with different contextual challenges which can be of economic, demographic, political, and/or cultural nature and vary by region.

Whereas studies on teaching quality usually approach differences in teaching quality with explanatory factors at national, school, teacher, class, and/or student level, this study adopts a regional perspective to extend the understanding of differences in teaching behaviour of beginning teachers (BTs) working in Dutch secondary education. As population decline and urbanization become more prominent in European countries (Eurostat, 2017), a substantial number of schools have to deal with region-specific challenges, such as dynamics in the teacher labour market and in student population, but also issues like the attractiveness and accessibility of school locations. No studies could be found that focus on the predictive behaviour of determinants of teaching quality (of BTs) in specific regional contexts. Neither were studies found that examine the specific contributions of regional school characteristics, such as degree of urbanization and changing student numbers on effective teaching behaviour. Yet, as the number of schools, teachers, and students in specific regions may be relatively low, it is of interest to explore regional differences in teacher quality, as it may have an effect on student outcomes in these specific regions which might not be captured in aggregated national figures. In particular, regional student outcomes could, for instance, be negatively affected when teachers working in these areas have overall lower teaching skills, for whatever reason. From the perspective of teacher education and in-service teacher development programmes, these insights are relevant for tailoring programmes that enhance professional development to the specific needs of schools.

By adopting a regional approach to extend the understanding of differences in teaching quality of beginning teachers, we argue that regional differences in effective teaching behaviour of beginning teachers may occur due to selectivity in intake and retention based on the attractiveness of schools' larger geographic areas, and due to adaptive strategies schools apply to deal with changing student numbers. While accounting for evident teacher and school factors, this study explores the contribution of factors within the regional school context which have not been previously examined.

Theoretical framework

Regional selection in attracting and retaining teachers

The regional context of schools provides opportunities for fulfilling needs in the teachers' individual education, work, housing, and household careers. More urbanized areas generally provide more opportunities for education and employment, offer a broader set of cultural and leisure facilities, and have a more varied and affordable range of housing than the more rural areas (Feijten, Hooimeijer, & Mulder, 2008). For young, recently graduated adults, regional economic conditions are a key factor in mobility and location decisions (Boyle, Halfacree, & Robinson, 1998; Cooke, 2008; Geist & McManus, 2008). This means that young people tend to move away from areas with fewer job opportunities to areas with more opportunities, which generally entails moving towards more urban areas. Suburban and rural areas become more attractive in the life stage of family formation, in particular for middle-class households (Feijten et al., 2008). In addition,

compared to other professions, teachers have lower residential mobility rates, and prefer to work in the region where they grew up (Boyd, Lankford, Loeb, & Wyckoff, 2005; Reininger, 2012; Venhorst, Van Dijk, & Van Wissen, 2011).

These processes suggest that there is a selective regional component in the distribution of (beginning) teachers; the "best" beginning teachers may be more likely to be offered and/or accept a job in the region they prefer to live in and be more hesitant to live in, or commute to, less favourable areas. Schools located in less favourable residential areas may therefore encounter a limited teacher pool to fulfil their vacancies. When they are forced to be less selective in hiring new staff, deal with higher turnover rates, or offer less attractive employment arrangements, regional differences in teaching quality will emerge.

Teaching context at schools with changing student numbers

Regional variation in birth rates and migration patterns cause regional variability in the dynamics of schools' student population and thereby specific challenges for schools to adapt to. In the situation of strong changing student numbers, higher standards of teaching quality might be necessary when classes have to be merged horizontally or vertically, when the variety in educational tracks is reduced, or when financial shortcomings are encountered (Vrielink, Jacobs, & Hogeling, 2010). A strategy to deal with financial shortages is to avoid permanent appointments, which implies that new teachers are offered contracts on a temporary or on pay-roll basis (Provincie Limburg, 2008; Vrielink et al., 2010). However, such unattractive employment arrangements make it more difficult to attract and retain high-quality teachers. When schools decide to reduce task hours related to mentoring and coaching existing staff, quality of programmes that enhance professional development will be affected, which will harm the development of teaching quality of beginning teachers.

Other school factors influencing teaching quality: socioeconomic status of students and professional development schools

Teachers (in the US) prefer to teach at more affluent and culturally homogeneous schools and tend to move away from teaching poor, low-performing, and "minority" students (Hanushek, Kain, & Rivkin, 2004; Lankford, Loeb, & Wyckoff, 2002). Research has shown that, as a result, retention of (beginning) teachers is more difficult in schools with a large share of students with low socioeconomic status (Danhier, 2016; Johnson & Birkeland, 2003) and that beginning teachers learn less in such demanding contexts (Ronfeldt, 2012; Sass, Hannaway, Xu, Figlio, & Feng, 2012). Other studies have shown that specific teaching skills are required to deal with the demanding learning and behavioural problems of such students (Muijs, Harris, Chapman, Stoll, & Russ, 2004; Sykes & Kuyper, 2013; Sykes & Musterd, 2011). In Belgium, schools with students of low ability or low socioeconomic status have less orderly learning environments and teachers cooperate less with each other (Opdenakker & Van Damme, 2007). On the basis of these findings, it can be expected that the teaching quality of BTs working in schools that have a larger proportion of students with low socioeconomic status is poorer than the teaching quality of teachers working in a more affluent school context.

Some schools collaborate with education institutes to develop school practices and to bridge the gap between the professional preparation and actual teaching practice, the so-called professional development schools (PDSs) (National Council for the Accreditation of Teacher Education, 2001). In a recent longitudinal study, Helms-Lorenz, Van de Grift, Canrinus, Maulana, and Van Veen (2018) found that classroom observation ratings and student perceptions of their teachers in the second year were higher for PDS teachers compared with non-PDS teachers. As such schools are likely to have retained the best student teachers, and because BTs working at such schools may benefit from the existing learning infrastructures developed for student teachers, it is expected that this school characteristic contributes to explaining differences in teaching quality of BTs.

Teacher factors influencing teaching quality: experience, gender, degree type, and class size

Teaching quality tends to increase with the accumulating number of years of experience (Day & Gu, 2007; Kini & Podolsky, 2016; Ladd & Sorensen, 2015; Maulana, Helms-Lorenz, & Van de Grift, 2015; Muijs et al., 2014; Van de Grift, Van der Wal, & Torenbeek, 2011). Findings concerning gender differences in teaching skills are inconsistent; in Dutch and Flemish contexts, male teachers show better leadership, cooperativeness, and friendliness with students (Opdenakker, Maulana, & Den Brok, 2012; Van Petegem, Aelterman, Rosseel, & Creemers, 2007) and better classroom management (Opdenakker & Van Damme, 2007). In developed countries, characteristics of a teachers' certification type make no difference for student educational outcomes (Scheerens, 2016). However, as the duration and intensity of practical classroom experience of student teachers differs by teacher curriculum, we do consider this an important factor in studying teachers with relatively little teaching experience. Finally, the number of students in the classroom has been shown to affect the behaviour of teachers and students in various manners (Blatchford, Bassett, & Brown, 2011; Pedder, 2006).

Other relevant factors influencing teacher behaviour

There are other teacher, classroom, and school factors that predict teaching quality of (beginning) teachers. Such factors at the personal level are teacher motivation (Fokkens-Bruinsma & Canrinus, 2014; Watt & Richardson, 2008), self-efficacy (Canrinus, Helms-Lorenz, Beijaard, Buitink, & Hofman, 2012; Darling-Hammond, Chung, & Frelow, 2002; Rots, Aelterman, Vlerick, & Vermeulen, 2007; Skaalvik & Skaalvik, 2007; Tschannen-Moran & Woolfolk Hoy, 2001), and well-being (Harmsen, Helms-Lorenz, Maulana, & Van Veen, 2018; Montgomery & Rupp, 2005). At the school level, organizational characteristics such as management, leadership, learning cultures, and teacher collaboration contribute to teaching quality (Creemers & Kyriakides, 2010; Kraft & Papay, 2014; Kutsyuruba et al., 2016; Opdenakker & Van Damme, 2007; Reynolds & Teddlie, 2000; Scheerens, 2016). All these factors are, however, beyond the scope of this study. This study focusses on regional demographics and teacher characteristics that can be determined from background information.

The Dutch context: teaching quality, regions of population decline, and the economic core

In the Netherlands, teacher education programmes can result in two types of degrees. A first-level degree (which is the higher level degree) is obtained after graduating at the university (master) level, a second degree at the bachelor level. Teachers with a first-level degree are qualified to teach in the lower and upper levels in secondary education. Teachers with a second-level degree are qualified to teach in the lower levels only. Second-degree teachers have more teaching experience because they follow a 4-year programme including a practical internship; first-degree teachers have 1 to 1.5 years for the full curriculum with less internship experience. Similar to the Anglo-Saxon PDSs, the PDSs in the Netherlands aim to bridge the gap between job requirements and theoretical curriculum requirements (Nederlands-Vlaamse Accreditatieorganisatie [NVAO], 2009). For beginning teachers in the Netherlands, Maulana et al. (2015) showed that students perceived increased teaching effectiveness over time, where the improvement of teaching skills was greater between Year 1 and Year 2, compared to the improvement between Year 2 and Year 3.

Students and teachers in the Dutch education system perform well. According to the latest figures of the Organisation for Economic Co-operation and Development (OECD), the Dutch school system is one of the best in the OECD, as a significantly higher proportion of students with a disadvantaged background succeeded at school, compared to the OECD average (OECD, 2016). According to the Dutch inspectorate (Inspectie van het Onderwijs, 2017), there are, however, remarkably large differences between schools concerning student achievement. These differences can, more than in other countries, be explained by learning climate, teacher quality, and learning materials. Regional sorting of teachers with different quality of teaching skills could be one underlying cause for these remarkable differences between schools.

In the Netherlands, one third of the municipalities is expected to experience low and negative population growth until 2040 (Kooiman, De Jong, Huisman, & Stoeldraijer, 2016). The overall student population for secondary education will decrease with more than 5% in the period 2015–2020 (Dienst Uitvoering Onderwijs [DUO], 2015b; Van den Berg, Defourny, Kuipers, & Stevenson, 2015). More than half of the secondary schools expect at least 7.5% declining student numbers, among which a quarter will experience a decrease of more than 15% (DUO, 2015b). Population composition effects and differences in migration flows lead to regional differences in the timing, pace, and strength of population decline. Designated areas of strong population decline are predominantly located in peripheral areas in the north, east, and south of the country (Kooiman et al., 2016) (Figure 1). These areas are less favourable for young adults to live in due to higher unemployment rates, population ageing, and reduced quality of various infrastructures, such as public transport and leisure activities (Bijker, Haartsen, & Strijker, 2012; Thissen, Fortuijn, Strijker, & Haartsen, 2010).

Regional characteristics of schools located in the economic core of the Netherlands (Randstad region) differ substantially from regions of population decline. This region covers the four largest cities and is the economic core of the country with a growing, and culturally more diverse (student) population (Centraal Bureau voor de Statistiek [CBS], 2017). Although in this geographic area more vacancies are available for teachers, relatively more vacancies remain unfulfilled and a larger share of classes are taught by uncertified teachers (Lubberman, Mommers, & Wester, 2015; Van den Berg et al., 2015). Such teachers are

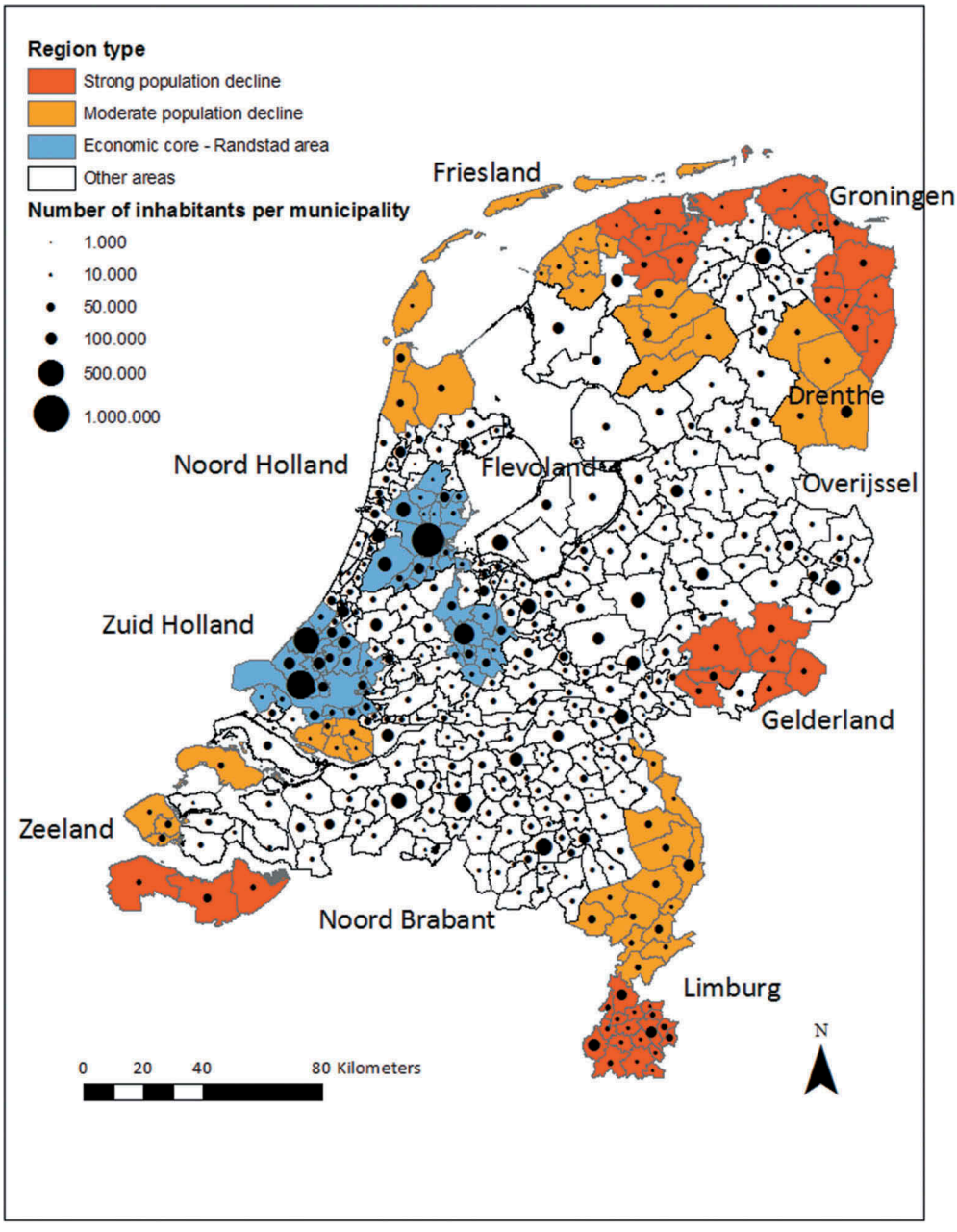

Figure 1. The Netherlands; Randstad region and regions of strong and moderate population decline.

known to have lower teaching skills and show less progress in the development of teaching skills than qualified beginning teachers do (Maulana et al., 2015). Interestingly, although teachers are more likely to get a permanent contract in this region (Fontein et al., 2016), the best teacher graduates are less likely than other graduates to move to the economic area in the Netherlands (Randstad region) (Venhorst, Van Dijk, & Van Wissen, 2010). These processes also indicate regional selection of teachers with different teaching quality.

Research questions

In order to gain more understanding of how factors within the regional school context contribute to explaining differences in teaching quality of beginning teachers, the following research questions will be answered in this study:

(1) What is the general level of teaching effectiveness of beginning teachers?
(2) Which part of the variation in teaching effectiveness of beginning teachers is explained by differences between schools?
(3) How do school-level characteristics (SES of students' neighbourhoods, professional development schools, student change, and degree of urbanization) explain differences in teaching effectiveness of beginning teachers?
(4) How do teacher-level characteristics (teaching experience, gender, degree type, and class size) explain differences in teaching effectiveness of beginning teachers?
(5) Does the general level of teaching effectiveness differ by region?
(6) Do school- and teacher-level characteristics similarly explain differences in teaching behaviour between teachers working at schools located in the Randstad region and those working in regions with population decline?

Method

Sample

The data for this study are a combination of primary and secondary data. Primary data of the project *Begeleiding Startende Leraren* (Induction Beginning Teachers) provided a sample of *certified* teachers with less than three years of teaching experience (N = 2,246). In this project, teacher education institutes assist schools to develop and implement a 3-year national induction programme for BTs with the aim to stimulate teaching quality and increase retention (Helms-Lorenz et al., 2015; Helms-Lorenz, Koffijberg, et al., 2018). During the academic years 2014 through 2019, schools could enrol in the project and were subsidized for each participating BT that met the criteria. BTs were recruited by the schools and were added as participants to the research project after signing an informed consent form.

Teaching behaviour was measured by means of classroom observations collected in the period 2014–2016. Although the project has a longitudinal design, we selected the baseline measure for this particular study in order to prevent bias due to interventions that were part of the project. A total of 32 teachers were omitted as they had followed an irregular teacher education programme; 230 teachers had not given consent to use the data for research purposes, or did not respond to this request; 39 teachers with less than 10 students or more than 35 students in the classroom were omitted. This selection procedure resulted in a final sample size of 1,945 certified teachers having less than three years of teaching experience, working in secondary education. These data were combined with secondary data on schools' past and predicted future student numbers (DUO, 2015a; VOION, Arbeidsmarkt en Opleidingsfonds Voortgezet Onderwijs, 2016), socioeconomic-status scores of neighbourhoods (Sociaal en Cultureel Planbureau [SCP], 2014), degree of urbanization of the municipality in which the school is located (CBS, 2014), and region type (Rijksoverheid, 2015).

Measures

Effective teaching behaviour

Effective teaching behaviour of beginning teachers was observed using the International Comparison of Learning and Teaching (ICALT) observation instrument, which identifies six observable domains of teaching behaviour that are significant predictors of student engagement. The domains form a unidimensional construct reflecting teaching effectiveness in primary and secondary education and are: a safe and stimulating learning climate, efficient classroom management, clarity of instruction, activating learning, adaptation to students' learning needs, and teaching learning strategies (Van de Grift, 2007, 2014; Van de Grift, Helms-Lorenz, & Maulana, 2014; Van der Lans, Van de Grift, & Van Veen, 2018). The former three can be referred to as basic teaching skills, the latter three as complex teaching skills. The observation instrument consists of 32 items and the qualification metrics of these skills are: 1.00–2.00 = insufficient; 2.01–3.00 = sufficient; and 3.01–4.00 = good.

Experienced teachers and school educators were selected to participate in a 4-hr observation training in which the observation instrument and scoring guidelines were explained. Observers practised the instrument with two recorded lessons. For each observed recorded lesson, the percentage of consensus between the observers was calculated and the agreement between the participant group and a previously established norm group was discussed. The training criterion of a consensus of at least 70% on the second observed lesson was met for all the observers involved. Depending on the number of participating BTs in a school, the number of observations varies per observer. The observation scores for this study were based on one observation for each participating BT. As one observation is not enough to evaluate teaching quality at the individual level (Van der Lans, 2017), for investigating cross-sectional differences in teaching quality of a large number of teachers one observation is enough.

School-level variables: students' socioeconomic status, professional development schools, student change, and degree of urbanisation

In the Netherlands, 664 secondary schools, having 1,489 school locations, were registered in 2016 (DUO, 2016). In this study, a school is defined as an administrative unit, represented by a unique number (BRIN), and referring to a single location (*Vestigingsnummer*). These unique numbers enabled us to add information to enrich the teacher data with school contextual characteristics.

Although there is high equity in SES within the Dutch educational system (OECD, 2016), we adjust for this factor as beginning teachers may experience more difficulties in low-SES contexts than in higher SES contexts. SES of students' residential neighbourhoods was used as a proxy for the socioeconomic composition of a school's student population. Information of the residential zip codes of schools' registered students (DUO, 2015a) was merged to status scores of these neighbourhoods (SCP, 2014). These status scores are composed of average income, share of residents with a low income, share of residents with a low educational level, and the share of residents that are unemployed (SCP, 2014). The continuous variable *proportion of students with lowest SES* represents the share of students living in neighbourhoods with lowest SES. The

student sample behind this figure refers to the number of students that were registered at a school in 2014, where the minimum was 93 and the maximum 2,963.

The variable *professional development school* (PDS) represents teachers working at schools qualified as a PDS by the NVAO in 2009 (see NVAO, 2009, for qualification criteria).

The variable *student change* represents a school's relative change in student numbers in a 7-year period with five categories based on actual and expected student numbers; 3 years before the observation, the observation year, and 3 years afterwards. Actual student numbers are based on registrations (DUO, 2015a), expected student numbers on predictions (VOION, Arbeidsmarkt en Opleidingsfonds Voortgezet Onderwijs, 2016). It was deliberately chosen to combine actual and predicted student numbers as it enables us to obtain insight into teaching behaviour at schools that currently experience (strong) student number decline or increase. The variable has five categories: a strong decline in student numbers (a reduction of at least 7.5%), a moderate decline in student numbers (a reduction of 2.5–7.5%), stable student numbers (up to 2.5% reduction and a maximum of 2.5% increase), a moderate increase in student numbers (an increase of 2.5–7.5%), and a strong increase in student numbers (an increase of at least 7.5%).

The variable *degree of urbanization* helps to unravel regional differences in teaching quality. It distinguishes four different geographic areas based on address density at the municipality level of the school in 2014 (very urban: 2,500 or more addresses per km^2; urban: 1,500–2,500 addresses per km^2; suburban: 1,000–1,500 addresses per km^2; rural: fewer than 1,000 addresses per km^2) (CBS, 2014).

Three geographic areas were defined that represent schools' economic, demographic, residential, and cultural context at a larger scale than the degree of urbanization of municipalities does (Figure 1). The first represents the Randstad area (definition covering 42 municipalities), the two others represent areas of population decline – the "top"-declining regions (47 municipalities), which expect a population decline of 16% until 2040, and the so-called "anticipating" regions (46 municipalities), where the population is expected to decline with 4% until 2040 (Rijksoverheid, 2015). The remaining area (268 municipalities) serves as reference category.

Teacher-level variables: experience, gender, degree type, and class size

The dichotomous variable *teaching experience* represents having less than one year, or having 1 to 3 years of experience after attaining a teaching degree. The variable *gender teacher* is represented by being female or male. The dichotomous variable *degree type* represents having a first or second teaching degree. The continuous variable *class size* represents the number of students present in the classroom during the observation.

Analytic strategy

A missing value analysis was conducted to determine whether data imputation of missing values was necessary. The variable class size had 5.2% missing cases. After conducting Little's MCAR test (missing completely at random; Little, 1998) with all explanatory variables of the study, it was concluded that these missing values were randomly distributed across all observations (Chi-Square = 47,186, *df* = 36, Sig. = .100) and do not need imputing (Garson, 2015).

Descriptive analyses were conducted to obtain information about the general and region-specific level of effective teaching behaviour (Research Question [RQ] 1). As the data were structured in a hierarchical order (beginning teachers nested in schools), two-level multilevel analyses were performed to investigate the share of intraclass correlations (RQ2) and to investigate the contribution of selected school and teacher characteristics in explaining differences in teaching behaviour of beginning teachers (RQ3 and RQ4). To explore whether the general teaching level and the effects of the explanatory variables differ in two specific regions (RQ5 and RQ6), the full models were stratified for teachers working at schools located in the Randstad region and those working in regions of population decline. The latter area combines both the areas of moderate and strong population decline because samples are small. For this region value, the multilevel models contain a dummy variable distinguishing both areas. All data preparation and analyses were conducted with SPSS Version 24.

Representativeness of the sample

The study sample consists of 1,945 qualified teachers working at 453 schools (Table 1). Eighty percent have less than one year of teaching experience after qualification, 60% are female, and the average class size during observations was 23.3 students. Ten percent of the schools are located in a region of (strong and moderate) population decline, one fifth of the schools are located in the Randstad region. One third of the schools in the sample experience a decrease in the number of students for the period 2012–2017, and more than half experience increasing student numbers. The average proportion of students living in neighbourhoods with the lowest SES is 27% for the full sample.

The sample is not random and contains an overrepresentation of larger schools, schools located in suburban and rural areas, schools that experience increasing student numbers, and schools with a lower proportion of students living in lowest SES neighbourhoods. Schools located in areas of population decline, as well in the Randstad area, are underrepresented.

For the Randstad region, the sample contains larger schools, relatively more female teachers, a greater proportion of schools with increasing student numbers, and two fifths located in (very) urban areas. In contrast, in the study sample schools located in areas of population decline are smaller, are more often located in suburban and rural areas, more often face student decline, and have a prominent larger proportion of students living in neighbourhoods of low SES. Compared with the sample in the Randstad, a greater share of teachers is male, and a greater proportion of teachers has a second teaching degree.

Results

Teaching effectiveness, general and regional levels

According to the qualification metric of effective teaching behaviour, the quality of beginning teachers' classroom climate (M = 3.30, SD = 0.55) and classroom management (M = 3.13, SD = 0.60) can be interpreted as good, clarity of instruction (M = 2.99, SD = 0.56) and activating learning (M = 2.52, SD = 0.60) as sufficient, and the average scores on the skills adaptive instruction (M = 1.85, SD = 0.65) and learning strategies

Table 1. Characteristics national sample and the study sample, stratified by region.

		All secondary schools in the Netherlands			Study sample		
		Total	Randstad region	Region population decline	Total	Randstad region	Region population decline
School characteristics							
Number of schools		1,489	366	232	453	89	45
Region	Strong population decline	8.6%		55.2%	6.0%		60.0%
	Moderate population decline	7.0%		44.8%	4.0%		40.0%
	Randstad	24.6%			19.6%	100.0%	
	Other	59.8%			70.4%	n.a.	
Student change (2012–2017)	Decrease ≥7.5%	25.9%	21.3%	37.9%	21.4%	15.7%	24.4%
	Decrease 2.5–7.5%	10.9%	7.9%	12.5%	11.9%	6.7%	17.8%
	Constant	9.7%	9.3%	8.6%	10.1%	9.0%	6.7%
	Increase 2.5–7.5%	11.8%	15%	7.8%	14.8%	20.2%	18.5%
	Increase ≥7.5%	31.0%	39.3%	22.0%	33.3%	48.3%	13.3%
	Missing	10.6%	7.1%	11.2%	8.6%		6.7%
Degree of urbanization	Very urban	21.6%	71.6%	17.7%	19.9%	67.4%	n.a.
	Urban	30.7%	13.4%	28.0%	25.6%	10.1%	n.a.
	Suburban	20.3%	13.1%	32.8%	25.2%	21.3%	33.3%
	Rural	23.6%	1.9%	21.6%	23.0%	1.1%	66.7%
	Missing	3.8%			6.4%		
Proportion students living in lowest SES neighbourhoods	Mean *(SD)*	32.3 (26.0)	37.7 (29.8)	52.1 (24.7)	26.8 (23.0)	24.3 (23.3)	56.3 (21.0)
Professional development school		24.1%	20.8%	11.6%	31.3%	20.2%	13.3%
School size	Mean *(SD)*	708 (512)	679 (469)	636 (509)	953 (516)	1067 (684)	663 (432)
Teacher characteristics[a]							
Number of teachers					1945	470	158
Experience years	0 to 1 years				80.4%	79.6%	81.0%
	1 to 3 years				19.6%	20.4%	19.0%
Percentage female teachers					60.1%	59.6%	53.8%
Qualification type	First degree				43.9%	42.4%	35.4%
	Second degree				53.8%	54.6%	63.9%
	Missing				2.4%	3.0%	0.6%
Class size	Mean (*SD*)				23.3 (5.1)	23.2 (5.1)	23.0 (5.3)

Note: [a]National information not available for certified teachers with less than three years of teaching experience.

Table 2. Effective teaching behaviour, six teaching skills obtained from the ICALT observation instrument, stratified by region.

	All $N = 1{,}945$	Randstad region $N = 470$		Region strong population decline $N = 69$		Region moderate population decline $N = 89$	
	Mean *(SD)*	Mean *(SD)*	Effect size[a]	Mean *(SD)*	Effect size[a]	Mean *(SD)*	Effect size[a]
Learning climate	3.30 (0.55)	3.35 (0.55)	0.11	3.55 (0.55)	0.46	3.33 (0.58)	0.04
Classroom management	3.13 (0.60)	3.19 (0.62)	0.14	3.31 (0.59)	0.31	3.17 (0.60)	0.07
Clear instruction	2.99 (0.56)	3.05 (0.58)	0.15	3.13 (0.61)	0.26	2.95 (0.61)	−0.07
Activating learning	2.52 (0.60)	2.57 (0.62)	0.11	2.51 (0.69)	−0.01	2.46 (0.62)	−0.10
Adaptive instruction	1.85 (0.65)	1.83 (0.66)	−0.03	1.90 (0.78)	0.08	1.88 (0.60)	0.05
Learning strategies	1.91 (0.68)	1.93 (0.70)	0.05	1.96 (0.68)	0.08	1.80 (0.62)	−0.16

Note: [a]Mean scores region compared with mean scores remaining sample.

($M = 1.91$, $SD = 0.68$) as insufficient (Table 2). The results also show that basic teaching skills are stronger for teachers working at schools located in areas of strong population decline ($M = 3.55$, $SD = 0.55$; $M = 3.31$, $SD = 0.59$; $M = 3.13$, $SD = 0.61$) than for teachers working at schools located elsewhere. For the complex teaching skills, no strong differences exist between the regions.

Effects of school and teacher characteristics

A multilevel approach would not be relevant when differences in teaching quality of BTs between schools are negligible. We therefore investigated whether such differences were present. For all skills, the models improve significantly when the random effect of the school level is added to the initial models with only the individual level (residuals) (Table 3). This indicates that there are differences between schools in teaching quality of BTs. In the empty models, 11% to 22% of the variance in domains of effective teaching behaviour measured with classroom observations are attributed to characteristics of schools. The differences between schools are the greatest in the least and most complex skills safe and stimulating learning climate and learning strategies, respectively.

When adopting the same strategy for the two regions of interest, all skills contain a hierarchical structure in the data except class management in the region of population decline. Compared with the full sample, in the Randstad region a higher proportion of the variance in adaptive instruction skills (21%) is attributed to differences between schools, for the regions of population decline this is the case for learning climate (25%) and teaching learning strategies (36%). The latter two should, however, be interpreted with care, as the number of teachers and schools in the sample is small. This implies that these rather high intra-class correlations may be spurious.

The multilevel models on effective teaching behaviour (Table 4) confirm that, with increasing experience, beginning teachers reveal higher levels in the more complex skills adaptive instruction ($b = 0.114$, $p = 0.005$) and learning strategies ($b = 0.081$, $p = 0.047$). Male teachers are somewhat stronger in teaching learning strategies than female teachers ($b = 0.069$, $p = 0.029$), and degree type does not make a difference for the quality of each skill. Larger class size is associated with poorer skills in class management ($b = -0.007$, $p = 0.021$), activating learning ($b = -0.008$, $p = 0.004$), adaptive instruction ($b = -0.014$, $p = 0.000$), and learning strategies ($b = -0.008$, $p = 0.013$).

Table 3. Distribution of the total variance of teaching behaviour over the school and teacher level.

		Learning climate	Class management	Clear instruction	Activating learning	Adaptive instruction	Learning strategies
Full sample (N = 1,945)	Model residuals only (−2LL)	3,161.961	3,498.882	3,255.088	3,535.941	3,843.547	4,032.222
	Model with random effect school level (−2LL)	3,093.380	3,451.252	3,206.589	3,469.784	3,781.364	3,886.782
	Likelihood Ratio (1)	68.6	47.6	48.5	66.2	62.2	145.4
	Variance school level	0.160	0.117	0.108	0.131	0.136	0.223
Randstad region (N = 470)	Model residuals only (−2LL)	764.758	886.712	819.714	879.710	934.402	995.661
	Model with random effect school level (−2LL)	747.626	875.859	811.714	860.844	907.540	954.243
	Likelihood Ratio (1)	17.1	10.8	8.0	18.9	26.9	41.4
	Variance school level	0.160	0.094	0.070	0.129	0.210	0.224
Region population decline (N = 158)	Model residuals only (−2LL)	272.754	283.632	293.253	312.182	323.809	311.338
	Model with random effect school level (−2LL)	262.892	282.259	287.751	299.476	316.175	282.414
	Likelihood Ratio (1)	9.9	1.4	5.5	12.7	7.6	28.9
	Variance school level	0.251	0.050	0.133	0.200	0.148	0.366

Table 4. Multilevel models, six teaching skills, full sample – 1,945 teachers at 453 schools.

		Learning climate		Class management		Clear instruction		Activating learning		Adaptive instruction		Learning strategies	
Coefficients		*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*
Teacher-level variables													
Intercept		3.383***	0.084	3.316***	0.090	3.107***	0.085	2.772***	0.093	2.227***	0.100	2.000***	0.107
Teaching experience[a]	0–1 years	−0.005	0.034	0.042	0.037	0.029	0.035	0.032	0.037	0.114**	0.040	0.081*	0.041
Gender teacher[b]	Male	0.000	0.026	−0.046	0.029	−0.025	0.027	0.008	0.029	0.016	0.031	0.069*	0.032
Degree type[c]	First	0.005	0.027	0.035	0.029	−0.026	0.028	−0.016	0.029	0.037	0.032	0.000	0.032
Class size		−0.003	0.003	−0.007*	0.003	−0.003	0.003	−0.008**	0.003	−0.014***	0.003	−0.008*	0.003
School-level variables													
Proportion students lowest SES		0.001	0.001	0.000	0.001	0.000	0.001	−0.001	0.001	0.000	0.001	−0.001	0.001
Professional development school[d]	Yes	−0.004	0.037	−0.002	0.038	−0.026	0.036	−0.004	0.041	−0.033	0.044	−0.001	0.052
Degree of urbanisation[e]	Very urban	0.027	0.049	−0.005	0.049	0.034	0.047	0.036	0.054	−0.033	0.067	0.055	0.068
	Urban	−0.101*	0.046	−0.149**	0.047	−0.078	0.045	−0.067	0.051	0.029	0.067	0.052	0.065
	Rural	0.045	0.052	−0.024	0.052	−0.024	0.050	−0.015	0.057	−0.002	0.060	0.028	0.072
Student change 2011–2017[f]	Decrease: ≥7.5%	0.006	0.054	−0.034	0.057	0.018	0.054	−0.004	0.060	−0.116*	0.057	0.001	0.071
	Decrease: 2.5–7.5%	0.001	0.056	0.082	0.059	0.070	0.057	−0.001	0.062	−0.052	0.055	−0.011	0.072
	Increase: 2.5–7.5%	−0.005	0.056	0.042	0.059	0.042	0.056	0.032	0.062	−0.076	0.061	0.161*	0.072
	Increase: ≥7.5%	−0.079	0.050	−0.044	0.053	−0.043	0.050	−0.056	0.056	−0.113	0.064	0.074	0.066
Model summaries	Variance school level	0.126		0.079		0.084		0.126		0.119		0.215	
	−2 Log-likelihood	2735.191		3037.162		2852.252		3084.245		3346.140		3436.665	

Notes: *$p < 0.05$. **$p < 0.01$. ***$p < 0.001$. [a]Ref 1–2 years, [b]ref female, [c]ref second degree, [d]ref no PDS, [e]ref suburban, [f]ref constant.

The school-level factors student SES and PDS do not significantly explain differences in teaching behaviour. Teachers working at schools with a decreasing student population have lower adaptive instruction skills than teachers working at schools with a more stable student size ($b = -0.116$, $p = 0.045$). And, although the estimate is insignificant, a similar negative relation for increasing student size with adaptive instruction is found ($b = -0.113$, $p = 0.079$). On learning climate and class management, teachers working at schools located in urban areas score significantly lower than teachers working elsewhere ($b = -0.101$, $p = 0.031$; $b = -0.149$, $p = 0.002$).

For teachers working in the Randstad region, the findings (Table 5) indicate that skills on learning climate are stronger for beginning teachers working in schools with a moderate student increase than for those working in schools with constant student numbers ($b = 0.309$, $p = 0.030$). Adaptive instruction skills are lower for those working in the very urban areas of the Randstad ($b = -0.357$, $p = 0.012$) compared with BTs working elsewhere. In the Randstad, the negative relation between class size and teaching learning strategies is greater than in the full sample model ($b = -0.013$, $p = 0.045$).

For beginning teachers working in regions of population decline (Table 6), the results indicate a strong positive relation between years of experience and all skills, male teachers being weaker than female teachers, and teachers with a first degree scoring lower on the basic skills than those with a second degree. Concerning the school-level factors, the three basic teaching skills and learning strategies of teachers working in areas of strong population decline are much stronger than those of teachers working in areas with a moderate population decline ($b = 0.391$, $p = 0.010$; $b = 0.308$, $p = 0.011$; $b = 0.310$, $p = 0.023$; $b = 0.399$, $p = 0.023$). Moderate student decline is negatively related with learning climate ($b = -0.531$, $p = 0.036$), and in the region of population decline adaptive instruction skills are lower when the proportion of students from neighbourhoods with the lowest SES is higher ($b = -0.010$, $p = 0.026$) and at PDS ($b = -0.390$, $p = 0.043$).

Discussion

The purpose of this explorative study was to adopt a regional perspective in understanding differences in teaching quality of beginning teachers. As schools are embedded in regions that differ in various ways, schools are challenged to deal with local conditions which can create specific circumstances to attract, keep, and support (beginning) teachers, thereby leading to (regional) differences in teaching quality. As the teacher labour market, infrastructures of housing and accessibility, and also student characteristics differ substantially between the regions of population decline and the economic core of the country, it is of interest to gain more insight into the extent to which determinants of teaching quality of BTs play a role in these different school contexts. Beginning teachers working in regions of population decline perform better on basic teaching skills (safe and simulating learning climate, classroom management, and clear instruction) than beginning teachers working in other regions of the Netherlands. A large proportion of students in this region has a lower socioeconomic background, which usually implies lower learning levels. Specific teaching skills are required to deal with more demanding learning and behavioural problems (Muijs et al., 2004; Sykes & Kuyper, 2013; Sykes & Musterd, 2011).

Table 5. Multilevel models, six teaching skills, Randstad region – 470 teachers at 89 schools.

		Learning climate		Class management		Clear instruction		Activating learning		Adaptive instruction		Learning strategies	
		b	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*
Teacher-level variables													
Intercept		3.142***	0.202	3.169***	0.221	3.018***	0.204	2.665***	0.224	2.145***	0.240	2.173***	0.252
Teaching experience[a]	0–1 years	−0.010	0.056	0.025	0.064	−0.018	0.060	0.045	0.064	0.113	0.066	0.137*	0.069
Gender teacher[b]	Male	−0.026	0.052	−0.015	0.060	−0.057	0.056	−0.019	0.059	−0.001	0.060	0.054	0.064
Degree type[c]	First	−0.038	0.053	0.015	0.060	−0.048	0.056	−0.026	0.060	−0.016	0.062	0.024	0.065
Class size		−0.001	0.005	−0.005	0.006	−0.001	0.006	−0.006	0.006	−0.004	0.006	−0.013*	0.007
School-level variables													
Proportion students lowest SES		−0.001	0.002	−0.001	0.002	−0.001	0.002	−0.002	0.002	0.004	0.006	−0.002	0.003
Professional development school[d]	Yes	0.017	0.098	−0.007	0.098	−0.010	0.086	0.056	0.105	−0.120	0.123	0.003	0.129
Degree of urbanisation[e]	Very urban	0.087	0.111	0.100	0.110	0.070	0.096	0.026	0.118	−0.357*	0.138	0.009	0.145
	Urban	0.028	0.164	−0.103	0.170	−0.029	0.152	−0.042	0.178	−0.039	0.202	−0.219	0.212
	Rural	0.060	0.386	−0.318	0.401	−0.131	0.363	−0.499	0.419	0.105	0.475	−0.972	0.498
Student change 2011–2017[f]	Decrease: ≥7.5%	0.208	0.159	0.118	0.169	0.309*	0.154	0.187	0.174	−0.151	0.191	0.006	0.201
	Decrease: 2.5–7.5%	0.190	0.162	0.024	0.176	−0.075	0.161	−0.025	0.180	−0.072	0.193	−0.006	0.204
	Increase: 2.5–7.5%	0.309*	0.141	0.160	0.152	0.134	0.140	0.161	0.156	0.237	0.169	0.214	0.178
	Increase: ≥7.5%	0.185	0.138	0.014	0.148	0.027	0.135	−0.015	0.151	−0.121	0.165	0.016	0.174
Model summaries	Variance school level	0.176		0.096		0.065		0.140		0.223		0.218	
	−2 Log-likelihood	689.992		800.978		743.129		795.429		826.039		873.090	

Notes: *$p < 0.05$. **$p < 0.01$. ***$p < 0.001$. [a]Ref 1–2 years, [b]ref female, [c]ref second degree, [d]ref no PDS, [e]ref suburban, [f]ref constant.

Table 6. Multilevel models, six teaching skills, region population decline – 158 teachers at 45 schools.

		Learning climate		Class management		Clear instruction		Activating learning		Adaptive instruction		Learning strategies	
		b	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*
Teacher-level variables													
Intercept		3.240***	0.342	3.342***	0.343	3.099***	0.358	2.949***	0.412	2.267***	0.406	2.192***	0.396
Teaching experience[a]	0–1 years	0.352***	0.117	0.269*	0.125	0.447***	0.129	0.264	0.141	0.216	0.147	0.308*	0.134
Gender teacher[b]	Male	−0.151	0.087	−0.244*	0.095	−0.215*	0.097	−0.252	0.105	−0.218	0.111	−0.109	0.099
Degree type[c]	First	−0.166	0.093	−0.229	0.101	−0.188	0.103	−0.043	0.112	−0.114	0.119	0.006	0.106
Class size		0.007	0.009	0.001	0.009	0.007	0.010	−0.007	0.010	0.006	0.011	−0.003	0.010
School-level variables													
Proportion students lowest SES		−0.001	0.004	0.002	0.004	0.000	0.004	−0.004	0.005	−0.010*	0.004	−0.007	0.005
Professional development school[d]	Yes	−0.133	0.186	−0.189	0.150	−0.328	0.167	−0.124	0.222	−0.390*	0.181	−0.085	0.221
Degree of urbanisation[e]	Rural	−0.003	0.163	−0.056	0.143	0.005	0.154	0.113	0.195	0.224	0.171	−0.123	0.192
Student change 2011–2017[f]	Decrease: ≥7.5%	0.030	0.195	−0.326	0.199	−0.324	0.207	−0.236	0.235	−0.196	0.235	−0.010	0.225
	Decrease: 2.5–7.5%	−0.531*	0.250	−0.381	0.249	−0.404	0.260	−0.292	0.301	−0.170	0.295	−0.201	0.289
	Increase: 2.5–7.5%	0.064	0.188	0.061	0.198	−0.042	0.204	−0.005	0.226	0.109	0.233	−0.020	0.215
	Increase: ≥7.5%	−0.038	0.211	−0.068	0.214	−0.214	0.223	−0.081	0.254	0.325	0.253	0.079	0.243
Strong population decline[g]		0.391*	0.141	0.308*	0.120	0.310*	0.130	0.160	0.168	0.158	0.144	0.399*	0.166
Model summaries	Variance school level	0.152		[h]		0.032		0.144		0.0971		0.178	
	−2 Log-likelihood	212.535		233.651		240.643		267.002		280.201		251.864	

Notes: *$p < 0.05$. **$p < 0.01$. ***$p < 0.001$. [a]Ref 1–2 years, [b]ref female, [c]ref second degree, [d]ref no PDS, [e]ref suburban, [f]ref constant, [g]ref moderate population decline, [h]no hierarchical structure in the data.

In such a context, stronger basic teaching skills might be required in order to keep this type of students motivated to learn. More research is needed to understand the needs of students with lower learning levels and to investigate which particular teaching skills are required to meet these learning needs. For this region, the finding that an increasing proportion of low-SES students is related with less adaptive instruction may indicate that school cultures in lower SES regions focus more on pedagogical and affective goals than on cognitive achievement goals. This increases inequity of learning opportunities provided by beginning teachers in these regions. Again, more research concerning specific teaching skills essential for this student group is needed in order to create beneficial conditions for this student population.

Finally, the findings for this region also indicate that teacher-level factors explain part of the variation in basic teaching skills, which does not apply for the full sample. This could be interpreted such that selectivity of teachers working in areas of population decline is greater than elsewhere in the Netherlands. The above findings should be interpreted with care, as the study sample in this particular region is small and concerns beginning teachers only. More in-depth investigation of characteristics of beginning, but also experienced, teachers, composition of teaching staff, and the organizational and professionalization policies of schools located in this very specific region is necessary to substantiate these findings.

Within the Randstad region, adaptive instruction skills of beginning teachers working in the very urban areas are on average found to be lower as well, which also points in the direction of regional inequity in learning opportunities for students who are taught by beginning teachers. This finding could reflect that a selective group of teachers is working in these specific areas, as indicated by Venhorst et al. (2010). In addition, as in parts of this region a larger share of classes are taught by uncertified teachers (Lubberman et al., 2015; Van den Berg et al., 2015), programmes that enhance professional development may not serve the needs of certified beginning teachers adequately as mentoring of uncertified teachers may be prioritized. For this specific region, it is therefore of interest to investigate various contextual dynamics that relate to teaching quality in more detail as well, and also to investigate the skills of more experienced teachers.

Besides these particular regional findings, a significant negative relation between strong student decline and adaptive instruction skills was found. In the situation of strong student decline, schools tend to merge classes vertically more often in order to reduce the number of required teachers (Vrielink et al., 2010). This implies that classes contain heterogeneous student levels, for which a teacher needs well-developed adaptive instruction skills. Strong student increase has a similar negative, but insignificant, relation. These negative relations indicate that quality of adaptive instruction is at risk when schools adapt to changing student numbers. Further research should investigate dynamics at these particular schools in more depth.

For the full sample, teacher-level factors were confirmed; more complex teaching skills are stronger with years of experience, complex teaching skills are negatively related with increasing class size, and male teachers perform better in teaching learning strategies. We found no predictive relationship between degree type and effective teaching behaviour. This implies that the quality of teaching is the same for teachers with different types of certificates. No significant relationships between student SES and teaching behaviour were found, indicating equity at the national level. As data

restrictions allowed us to adjust for this confounding factor with a proxy only, it is recommended that the contribution of this factor is investigated with more appropriate SES indicators. Working at a professional development school does not explain differences in teaching behaviour, which indicates that these schools do not systematically employ stronger teachers than non-PDSs do. It should be kept in mind that the reported relationships concern contributions of characteristics related to beginning teachers. If this approach was applied to more experienced teachers, the findings could have been different.

The study entails several limitations concerning representativeness caused by selective participation of schools and teachers in the overarching induction programme. Schools that were the first to be enrolled in the project were more often than not in a partnership with regional teacher education institutes. As the partnerships are formal and entail agreements of the basis of education content and learning organization, these are most likely the better organized schools, with arguably better learning infrastructures for teachers. As a consequence, the reported effects could be an overrepresentation of teaching quality of BTs compared with the situation of having captured teaching quality of all BTs. As schools located in areas of population decline and in the Randstad area are underrepresented in the study sample, it would be of interest for future research to involve more schools in these regions.

However, while considering these limitations, this study does show that regional differences in teaching quality exist.

By adopting a regional perspective to understanding differences in teacher behaviour, this study is innovative in the sense that a level between the commonly investigated national level and the school level is considered to matter. We conclude that the findings of this study suggest the existence of a selective regional component in the distribution of beginning teachers in the Netherlands. It is unclear whether this is (partly) due to residential or school preferences of beginning teachers, or direct or indirect selection procedures of schools, or whether it is caused by other uncaptured processes. The findings of this exploratory study are, however, very relevant because when the number of schools, teachers, and students in specific regions is relatively small, deviant teaching behaviour may not be captured with the commonly used approaches. As this study concerns beginning teachers only, it is relevant to investigate whether these differences are also present among experienced teachers. From the perspective of teacher education and in-service teacher development, findings of this study, but also of follow-up research on the development of teaching skills of teachers working in specific regions, provide relevant information for developing, or modifying existing, programmes that enhance professional development in specific regional contexts. For the Dutch situation, it would be of interest to have a closer look at teaching skills of teachers working in the so-called Bible Belt, a geographic area that is known for its specific religious background, where the more prevailing conservative and collectivistic attitudes (Brons, 2006) could influence the educational context in which students, teachers, and schools operate. In areas of strong population decline, the focus of induction arrangements should be on developing complex teaching skills to maximize student achievement. In the very urban areas, induction programmes should aim to increase the knowledge of teaching in culturally diverse classrooms in order to strengthen adaptive instruction skills of beginning teachers, which will in turn benefit learning opportunities for all students.

Acknowledgements

We thank all teachers and observers for their contribution to the data collection. Also, we thank Peter Moorer for the data management and Petra Flens for coordinating the data collection. The data were collected in a national research project concerning the relationship between the development of the quality of teaching behaviour of beginning teachers and induction programmes in Dutch secondary education (www.begeleidingstartendeleraren.nl).

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This project was financed by the Dutch Ministry of Education [project number 804A0-46949].

Notes on contributors

Marieke van der Pers obtained her PhD degree in the field of Population Studies. She is experienced in the field of demography and geography with a particular interest in residential mobility. Currently, her research activities concern data collection among beginning and experienced teachers in the Netherlands and conducting research within the teacher education field from a demographic and geographic perspective. Marieke van der Pers performed all data preparation and statistical analyses and wrote the paper.

Michelle Helms-Lorenz obtained her PhD degree in the field of Cross-Cultural Psychology. She specialized in the assessment of cognitive abilities in multicultural elementary school settings. Thereafter, she conducted a project aimed to study metacognitive abilities in a multicultural setting. Currently, her research focus includes the effectiveness of (national and international) teacher education and interventions aimed to stimulate the professional development and well-being of (student and beginning) teachers. Additionally, she is reviewing and developing interventions to support teachers' adaptive instruction skills. Michelle Helms-Lorenz discussed the data preparation and statistical analyses and contributed to writing the paper.

ORCID

Marieke van der Pers http://orcid.org/0000-0003-3838-6060
Michelle Helms-Lorenz http://orcid.org/0000-0001-9314-6962

References

Bijker, R. A., Haartsen, T., & Strijker, D. (2012). Migration to less-popular rural areas in the Netherlands: Exploring the motivations. *Journal of Rural Studies*, *28*(4), 490–498. doi:10.1016/j.jrurstud.2012.07.003

Blatchford, P., Bassett, P., & Brown, P. (2011). Examining the effect of class size on classroom engagement and teacher–pupil interaction: Differences in relation to pupil prior attainment and primary vs. secondary schools. *Learning and Instruction*, *21*(6), 715–730. doi:10.1016/j.learninstruc.2011.04.001

Boyd, D., Lankford, H., Loeb, S., & Wyckoff, J. (2005). The draw of home: How teachers' preferences for proximity disadvantage urban schools. *Journal of Policy Analysis and Management*, *24*(1), 113–132. doi:10.1002/pam.20072

Boyle, P., Halfacree, K., & Robinson, V. (1998). *Exploring contemporary migration*. Harlow: Pearson Education.

Brons, L. L. (2006). Indirect measurement of regional culture in the Netherlands. *Tijdschrift voor economische en sociale geografie*, *97*(5), 547–566. doi:10.1111/j.1467-9663.2006.00363.x

Canrinus, E. T., Helms-Lorenz, M., Beijaard, D., Buitink, J., & Hofman, A. (2012). Self-efficacy, job satisfaction, motivation and commitment: Exploring the relationships between indicators of teachers' professional identity. *European Journal of Psychology of Education*, *27*(1), 115–132. doi:10.1007/s10212-011-0069-2

Centraal Bureau voor de Statistiek. (2014). *Stedelijkheid per gemeente – 2014* [Degree of urbanisation per municipality – 2014] [Data file]. Retrieved from https://opendata.cbs.nl/statline/#/CBS/nl/dataset/70072ned/table?ts=1551171248254

Centraal Bureau voor de Statistiek. (2017). *VO-leerlingen, onderwijssoort, leerjaar, migratieachtergrond, generatie 2016/2017* [Secondary education students, education type, year, migration background, generation 2016/2017] [Data file]. Retrieved from https://opendata.cbs.nl/statline/#/CBS/nl/dataset/80040ned/table?ts=1551171174785

Cooke, T. J. (2008). Migration in a family way. *Population, Space and Place*, *14*(4), 255–265. doi:10.1002/psp.500

Creemers, B., & Kyriakides, L. (2008). *The dynamics of educational effectiveness: A contribution to policy, practice and theory in contemporary schools*. Abingdon: Routledge.

Creemers, B., & Kyriakides, L. (2010). School factors explaining achievement on cognitive and affective outcomes: Establishing a dynamic model of educational effectiveness. *Scandinavian Journal of Educational Research*, *54*(3), 263–294. doi:10.1080/00313831003764529

Danhier, J. (2016). Teachers in schools with low socioeconomic composition: Are they really that different? *European Education*, *48*(4), 274–293. doi:10.1080/10564934.2016.1248231

Darling-Hammond, L., Chung, R., & Frelow, F. (2002). Variation in teacher preparation: How well do different pathways prepare teachers to teach? *Journal of Teacher Education*, *53*(4), 286–302. doi:10.1177/0022487102053004002

Day, C., & Gu, Q. (2007). Variations in the conditions for teachers' professional learning and development: Sustaining commitment and effectiveness over a career. *Oxford Review of Education*, *33*(4), 423–443. doi:10.1080/03054980701450746

Dienst Uitvoering Onderwijs. (2015a). *Leerlingen per vestiging naar postcode en leerjaar – 2014–2015* [Students per location by postcode and year] [Data file]. Retrieved from https://duo.nl/open_onderwijsdata/databestanden/vo/leerlingen/leerlingen-vo-2.jsp

Dienst Uitvoering Onderwijs. (2015b). *Prognose aantal leerlingen in het voortgezet onderwijs* [Projections number of students in secondary education] [Data file]. Retrieved from https://duo.nl/open_onderwijsdata/databestanden/vo/leerlingen/leerlingen-vo-11.jsp

Dienst Uitvoering Onderwijs. (2016). *Alle vestigingen VO* [School locations secondary education] [Data file]. Retrieved from https://duo.nl/open_onderwijsdata/databestanden/vo/adressen/

Eurostat. (2017). *Key figures on Europe, 2017 edition*. Luxembourg: Publications Office of the European Union.

Feijten, P., Hooimeijer, P., & Mulder, C. H. (2008). Residential experience and residential environment choice over the life-course. *Urban Studies*, *45*(1), 141–162. doi:10.1177/0042098007085105

Fokkens-Bruinsma, M., & Canrinus, E. T. (2014). Motivation for becoming a teacher and engagement with the profession: Evidence from different contexts. *International Journal of Educational Research*, *65*, 65–74. doi:10.1016/j.ijer.2013.09.012

Fontein, P., Kieruj, N., Den Uijl, M., De Vos, K., Van der Boom, E., & Vrielink, S. (2016). *Loopbaanmonitor onderwijs* [Monitor on careers in education]. Tilburg: CentERdata.

Garson, G. D. (2015). *Missing values analysis and data imputation*. Asheboro, NC: Statistical Associates.

Geist, C., & McManus, P. A. (2008). Geographical mobility over the life course: Motivations and implications. *Population, Space and Place*, *14*(4), 283–303. doi:10.1002/psp.508

Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (2004). Why public schools lose teachers. *Journal of Human Resources*, *39*(2), 326–354. doi:10.2307/3559017

Harmsen, R., Helms-Lorenz, M., Maulana, R., & Van Veen, K. (2018). The relationship between beginning teachers' stress causes, stress responses, teaching behaviour and attrition. *Teachers and Teaching: Theory and Practice*, *24*(6), 626–643. doi:10.1080/13540602.2018.1465404

Helms-Lorenz, M., Buitink, J., 't Hart, W., Van Mourik, C. A., Schuurman, G., & Ewalts, H. (2015). *Begeleiding van beginnende docenten: Een kader voor de ontwikkeling van school-specifieke inductiearrangementen* [Supporting beginning teachers: A framework for the development of school specific induction arrangements]. Groningen: Lerarenopleiding Rijksuniversiteit Groningen.

Helms-Lorenz, M., Koffijberg, J., Schellings, G., Van der Wolk, W., Aarts, R., Runhaar, P., & Flens, P. (2018). De driejarige begeleiding van startende leraren in Nederland [Supporting beginning teachers in the first three years of their professional practice in the Netherlands]. In S. De Vos, J. De Wilde, & S. Beausaert (Eds.), *Start to teach: Inspiratiegids over aanvangsbegeleiding in het onderwijs* (pp. 55–77) Antwerpen-Apeldoorn: Garant.

Helms-Lorenz, M., Van de Grift, W., Canrinus, E., Maulana, R., & Van Veen, K. (2018). Evaluation of the behavioral and affective outcomes of novice teachers working in professional development schools versus non-professional development schools. *Studies in Educational Evaluation*, *56*, 8–20. doi:10.1016/j.stueduc.2017.10.006

Inspectie van het Onderwijs. (2017). *De staat van het onderwijs* [The state of education in the Netherlands]. Utrecht: Ministerie van Onderwijs, Cultuur en Wetenschap.

Johnson, S. M., & Birkeland, S. E. (2003). Pursuing a "sense of success": New teachers explain their career decisions. *American Educational Research Journal*, *40*(3), 581–617. doi:10.3102/00028312040003581

Kini, T., & Podolsky, A. (2016). *Does teaching experience increase teacher effectiveness? A review of the research*. Palo Alto, CA: Learning Policy Institute.

Kooiman, N., De Jong, A., Huisman, C., & Stoeldraijer, L. (2016). *PBL/CBS regionale bevolkings- en huishoudensprognose 2016–2040* [Regional population and household projections for 2016–2040]. Den Haag/Heerlen/Bonaire: PBL/CBS.

Kraft, M. A., & Papay, J. P. (2014). Can professional environments in schools promote teacher development? Explaining heterogeneity in returns to teaching experience. *Educational Evaluation and Policy Analysis*, *36*(4), 476–500. doi:10.3102/0162373713519496

Kutsyuruba, B., Godden, L., Covell, L., Matheson, I., & Walker, K. (2016). *An international systematic review of research: Understanding the contextual factors within teacher induction and mentoring programs*. Kingston and Saskatoon: Queen's University and University of Saskatchewan.

Ladd, H. F., & Sorensen, L. C. (2015). *Do master's degrees matter? Advanced degrees, career paths, and the effectiveness of teachers* (CALDER Working Paper No. 136). Washington; DC: National Center for Analysis of Longitudinal Data in Education Research.

Lankford, H., Loeb, S., & Wyckoff, J. (2002). Teacher sorting and the plight of urban schools: A descriptive analysis. *Educational Evaluation and Policy Analysis*, *24*(1), 37–62. doi:10.3102/01623737024001037

Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, *83*(404), 1198–1202. doi:10.2307/2290157

Lubberman, J., Mommers, A., & Wester, M. (2015). *Arbeidsmarktbarometer PO, VO, MBO 2014/2015* [Labour-market education 2014/2015]. Nijmegen: ITS, Radboud Universiteit Nijmegen.

Maulana, R., Helms-Lorenz, M., & Van de Grift, W. (2015). A longitudinal study of induction on the acceleration of growth in teaching quality of beginning teachers through the eyes of their students. *Teaching and Teacher Education*, *51*, 225–245. doi:10.1016/j.tate.2015.07.003

Montgomery, C., & Rupp, A. A. (2005). A meta-analysis for exploring the diverse causes and effects of stress in teachers. *Canadian Journal of Education*, *28*(3), 461–488. doi:10.2307/4126479

Muijs, D., Harris, A., Chapman, C., Stoll, L., & Russ, J. (2004). Improving schools in socioeconomically disadvantaged areas – A review of research evidence. *School Effectiveness and School Improvement*, *15*(2), 149–175. doi:10.1076/sesi.15.2.149.30433

Muijs, D., Kyriakides, L., Van der Werf, G., Creemers, B., Timperley, H., & Earl, L. (2014). State of the art – Teacher effectiveness and professional learning. *School Effectiveness and School Improvement*, *25*(2), 231–256. doi:10.1080/09243453.2014.885451

National Council for the Accreditation of Teacher Education. (2001). *Standards for professional development schools*. Washington, DC: Author.

Nederlands-Vlaamse Accreditatieorganisatie. (2009). *Toetsingskader opleidingsschool* [Accreditation framework for professional development school]. Den Haag: Author.

Opdenakker, M.-C., Maulana, R., & Den Brok, P. (2012). Teacher–student interpersonal relationships and academic motivation within one school year: Developmental changes and linkage. *School Effectiveness and School Improvement*, *23*(1), 95–119. doi:10.1080/09243453.2011.619198

Opdenakker, M.-C., & Van Damme, J. (2001). Relationship between school composition and characteristics of school process and their effect on mathematics achievement. *British Educational Research Journal*, *27*(4), 407–432. doi:10.1080/01411920120071434

Opdenakker, M.-C., & Van Damme, J. (2007). Do school context, student composition and school leadership affect school practice and outcomes in secondary education? *British Educational Research Journal*, *33*(2), 179–206. doi:10.1080/01411920701208233

Organisation for Economic Co-operation and Development. (2016). *Netherlands 2016: Foundations for the future*. Paris: Author.

Pedder, D. (2006). Are small classes better? Understanding relationships between class size, classroom processes and pupils' learning. *Oxford Review of Education*, *32*(2), 213–234. doi:10.1080/03054980600645396

Provincie Limburg. (2008). *Demografische voorsprong: Kwaliteitsslag onderwijs* [Demographic lead: A qualitative leap in education]. Voerendaal: Schrijen-Lipperts-Huntjens.

Reininger, M. (2012). Hometown disadvantage? It depends on where you're from: Teachers' location preferences and the implications for staffing schools. *Educational Evaluation and Policy Analysis*, *34*(2), 127–145. doi:10.3102/0162373711420864

Reynolds D., Teddie C. (Eds.). (2000). *The international handbook of school effectiveness research*. Abingdon: Routledge.

Rijksoverheid. (2015). *Indeling gemeenten krimpregio's en anticipeerregio's* [Municipalities in areas of population decline]. Retrieved from https://www.rijksoverheid.nl/documenten/publicaties/2015/06/29/indeling-gemeenten-krimpregio-s-en-anticipeerregio-s

Ronfeldt, M. (2012). Where should student teachers learn to teach? Effects of field placement school characteristics on teacher retention and effectiveness. *Educational Evaluation and Policy Analysis*, *34*(1), 3–26. doi:10.3102/0162373711420865

Rots, I., Aelterman, A., Vlerick, P., & Vermeulen, K. (2007). Teacher education, graduates' teaching commitment and entrance into the teaching profession. *Teacher and Teaching Education*, *23*(5), 543–556. doi:10.1016/j.tate.2007.01.012

Sass, T. R., Hannaway, J., Xu, Z., Figlio, D. N., & Feng, L. (2012). Value added of teachers in high-poverty schools and lower-poverty schools. *Journal of Urban Economics*, *72*(2–3), 104–122. doi:10.1016/j.jue.2012.04.004

Scheerens, J. (2016). *Educational effectiveness and ineffectiveness: A critical review of the knowledge base*. Dordrecht: Springer.

Skaalvik, E. M., & Skaalvik, S. (2007). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. *Journal of Educational Psychology*, *99*(3), 611–625. doi:10.1037/0022-0663.99.3.611

Sociaal en Cultureel Planbureau. (2014). *Statusscores, peildatum 2014* [Status scores 2014]. Retrieved from https://www.scp.nl/Onderzoek/Lopend_onderzoek/A_Z_alle_lopende_onderzoeken/Statusscores

Sykes, B., & Kuyper, H. (2013). School segregation and the secondary-school achievements of youth in the Netherlands. *Journal of Ethnic and Migration Studies*, *39*(10), 1699–1716. doi:10.1080/1369183X.2013.833707

Sykes, B., & Musterd, S. (2011). Examining neighbourhood and school effects simultaneously: What does the Dutch evidence show? *Urban Studies*, *48*(7), 1307–1331. doi:10.1177/0042098010371393

Thissen, F., Fortuijn, J. D., Strijker, D., & Haartsen, T. (2010). Migration intentions of rural youth in the Westhoek, Flanders, Belgium and the Veenkoloniën, the Netherlands. *Journal of Rural Studies*, *26*(4), 428–436. doi:10.1016/j.jrurstud.2010.05.001

Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, *17*(7), 783–805. doi:10.1016/S0742-051X(01)00036-1

Van de Grift, W. (2007). Quality of teaching in four European countries: A review of the literature and application of an assessment instrument. *Educational Research*, *49*(2), 127–152. doi:10.1080/00131880701369651

Van de Grift, W. J. C. M. (2014). Measuring teaching quality in several European countries. *School Effectiveness and School Improvement*, *25*(3), 295–311. doi:10.1080/09243453.2013.794845

Van de Grift, W., Helms-Lorenz, M., & Maulana, R. (2014). Teaching skills of student teachers: Calibration of an evaluation instrument and its value in predicting student academic engagement. *Studies in Educational Evaluation*, *43*, 150–159. doi:10.1016/j.stueduc.2014.09.003

Van de Grift, W., Van der Wal, M., & Torenbeek, M. (2011). Ontwikkeling in de pedagogisch didactische vaardigheid van leraren in het basisonderwijs [Development of teaching skills of primary school teachers]. *Pedagogische Studiën*, *88*, 416–432.

Van den Berg, D., Defourny, R., Kuipers, Z., & Stevenson, S. (2015). *Regionale arbeidsmarktrapportages voortgezet onderwijs 2015* [Projections regional labour market secondary education 2015]. Heerlen: VOION.

Van der Lans, R. (2017). *Teacher evaluation through observation: Application of classroom observation and student ratings to improve teaching effectiveness in classrooms* (Doctoral dissertation). Retrieved from http://hdl.handle.net/11370/b40c6e18-5dd5-458a-a830-57d743f2700d

Van der Lans, R. M., Van de Grift, W. J. C. M., & Van Veen, K. (2018). Developing an instrument for teacher feedback: Using the Rasch model to explore teachers' development of effective teaching strategies and behaviors. *The Journal of Experimental Education*, *86*(2), 247–264. doi:10.1080/00220973.2016.1268086

Van Petegem, K., Aelterman, A., Rosseel, Y., & Creemers, B. (2007). Student perception as moderator for student wellbeing. *Social Indicators Research*, *83*(3), 447–463. doi:10.1007/s11205-006-9055-5

Venhorst, V., Van Dijk, J., & Van Wissen, L. (2010). Do the best graduates leave the peripheral areas of the Netherlands? *Tijdschrift voor economische en sociale geografie*, *101*(5), 521–537. doi:10.1111/j.1467-9663.2010.00629.x

Venhorst, V., Van Dijk, J., & Van Wissen, L. J. G. (2011). An analysis of trends in spatial mobility of Dutch graduates. *Spatial Economic Analysis*, *6*(1), 57–82. doi:10.1080/17421772.2010.540033

VOION, Arbeidsmarkt en Opleidingsfonds Voortgezet Onderwijs. (2016). *Scenariomodel VO – Basisprognose* [Projections labour market secondary education]. Retrieved from https://www.scenariomodel-vo.nl/

Vrielink, S., Jacobs, J., & Hogeling, L. (2010). *Krimp als kans. Leerlingendaling in het primair en voortgezet onderwijs* [Declining student size in primary and seconary education]. Nijmegen: ResearchNed.

Watt, H. M. G., & Richardson, P. W. (2008). Motivations, perceptions, and aspirations concerning teaching as a career for different types of beginning teachers. *Learning and Instruction*, *18*(5), 408–428. doi:10.1016/j.learninstruc.2008.06.002